भारतीय मानक
Indian Standard

IS 15183 (Part 2) : 2018

भवनों के रखरखाव की व्यवस्था — मार्गदर्शी सिद्धांत

भाग 2 वित्त

(पहला पुनरीक्षण)

Maintenance Management of Buildings — Guidelines

Part 2 Finance

(First Revision)

ICS 91.040.01

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फ़र मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

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Building Construction Practices Sectional Committee, CED 13

FOREWORD

This Indian Standard (Part 2) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Building Construction Practices Sectional Committee had been approved by the Civil Engineering Division Council.

Maintenance management in building industry is the art of preserving over a long period what has been constructed. It is as important as construction management or even more. Whereas construction stage lasts for a short period, say 2 to 5 years, maintenance continues for at least 20 to 30 times the construction phase. Bad practice of maintenance adversely affects the environment in which people live or work, thus affecting the overall output.

Even though the adverse effects of deterioration of a building are known, yet the process of maintenance of the building is given a very low priority and most of the maintenance decisions are taken by the management on the basis of expediency, and in most of the cases are unrelated compromises between the physical needs and availability of finance.

Though the buildings may be designed to be very durable, they need maintenance to keep them in good condition. Everyone concerned with buildings whether owners, engineers, designers, constructors or users should take a serious interest in building maintenance. In the post-construction stage, the day-to-day maintenance or upkeep of the building shall certainly delay the decay of the building structure.

The Indian Standard IS 15183 was envisaged to address the important aspect of maintenance management of buildings. This standard is published in three parts. The other parts in the series are:

Part 1	General
Part 3	Labour

This standard (Part 2) on finance, was first published in 2002 and was intended to cover the aspects related to finance management. This standard keeps in view the practices in the field of building maintenance management in the country.

The first revision of this standard is aimed at bringing the provisions included in the standard at par with the provisions of the SP 7 (Part 12) : 2016 ‘National building code of India 2016: Part 12 Asset and facility management’. Also, other necessary changes have been incorporated.

In this revision the following major changes have been made:

a) Provisions on maintenance costs and finance have been detailed;
b) New and detailed provisions on cost effectiveness have been included in detail with illustrations; and
c) Terminologies have been updated.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

Indian Standard

MAINTENANCE MANAGEMENT OF BUILDINGS — GUIDELINES

PART 2 FINANCE

(First Revision)

1 SCOPE

This standard (Part 2) provides guidelines on financial management concerning building maintenance.

> NOTE — For detailed provisions on management of building assets and associated facilities; and maintenance of fixed assets and building services facilities, a reference may be made to the SP 7 (Part 12) : 2016 'National building code of India 2016: Part 12 Asset and facility management'. Also, the sustainability aspects related to maintenance given in **13.3** of SP 7 (Part 11) may be referred.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subjected to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
3861 : 2002	Method of measurement of plinth, carpet and rentable areas of buildings (*second revision*)
15183 (Part 1) : 2018	Guidelines for maintenance management of buildings: Part 1 General (*first revision*)
15883	Guidelines for construction project management
(Part 1) : 2009	General
(Part 3) : 2015	Cost management
SP 7 : 2016	National building code of India 2016

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Building Maintenance — Work undertaken to maintain or restore the performance of the building fabric and its services to provide an efficient, safe and acceptable operating environment to its users.

3.2 Competent Person — Person, suitably qualified and trained by knowledge and practical experience.

3.3 Critical Asset — Asset having potential to significantly impact the achievement of the organization's objectives.

3.4 End-user — Recipient of facility-related services.

> NOTE — Recipients include occupants and other users of a facility.

3.5 Facilities Maintenance — Work needed to maintain the performance of the building structure, fabric and components, and engineering installations.

3.6 Facility — Tangible asset that supports/serves an organization.

3.7 Financial Management — Financial management is the part of management activity which is concerned with planning and controlling financial resources.

3.8 Maintenance — An intervention on an asset to improve its operation or ensure its continued good operation (It is also the combination of all technical and associated administrative actions during the service life to retain a building, or its parts, in a state in which it can perform its required functions).

3.9 Maintenance Management — Process of ensuring that the most effective and efficient maintenance programme is formulated and delivered to ensure that assets/facilities continue to perform their intended function. The organization of maintenance has to be within an agreed policy. Maintenance can be seen as a form of 'steady state' activity.

3.10 Owner — Person or body having a legal interest in a building. This includes free holders, lease holders or those holding a sub-lease which both bestows a legal right to occupation and gives rise to liabilities in respect of safety or building condition. In case of lease or sub-lease holders, as far as ownership with respect to the structure is concerned, the structure of a flat or structure on a plot belongs to the allotee/lessee till the allotment/lease subsists.

3.11 Plinth — The portion of a structure between the surface of the surrounding ground and surface of the floor, immediately above the ground.

3.12 Plinth Area — The built up covered area measured at the floor level of the basement or of any storey (*see also* IS 3861).

3.13 Physical Asset — A tangible, manmade object that has a specific function, normally within a broader system.

3.14 Service Life — Period of time after installation during which a building or its parts meets or exceed the performance requirements.

3.15 Whole Life Costing — An understanding of the full economic impact of owning an asset, covering all stages of its life cycle.

4 FINANCIAL MANAGEMENT IN BUILDING MAINTENANCE

4.1 The planning and control of finance is an important aspect of maintenance management not only for the control of maintenance but also to demonstrate that the owners are getting value for money and that the maintenance proposals justify the funds requested.

4.2 Financial considerations start with the development of maintenance programmes and the preparation of budget proposals. They also include the preparation of detailed maintenance programme following the allocation of budget funds. These will involve decisions regarding optimum repair reaction time and the choice of the most appropriate method of execution (directly employed) labour.

4.3 It would be a good practice to carry out during the following financial year, a technical audit to ascertain the extent to which value for money was obtained from the funds expended in the previous year and what improvements in management might be made to improve cost benefits. A reference may also be made to the provisions on construction project management including cost management and maintenance as given in IS 15883 (Parts 1 and 3).

4.4 Financial Plan

The financial plan may be divided into short-term plan and long-term plan.

4.4.1 *Short-term Plan*

Short-term plan takes care of short-term objectives and the various statutory requirements. This will be:

a) *Day-to-day service* — This includes certain components or items which, by virtue of their extensive use or otherwise, need frequent repairs. This involves heavy deployment of human resources.

b) *Annual repairs* — This includes periodical maintenance to keep the building stock habitable, healthy and in presentable condition.

4.4.2 *Long-term Plan*

This may include special repairs to prevent the structure from deterioration and undue wear and tear, and to restore the structure, fittings and fixtures to operative and acceptable standards. These repairs are carried out as a continuing programme.

4.5 Cost Effectiveness

The facility manager has to work out the cost effectiveness of the method adopted taking into account the resources availability, criticalness of services and cost trade off to determine the frequency and level of maintenance to be ensured. Impact of various factors on costs involved and degree of maintenance services achieved is shown in Figs. 1 to 3.

5 MAINTENANCE BUDGETING

5.1 Maintenance budgeting is directed to keeping building in appropriate condition by the most economic means and each aspect of maintenance policy bears on cost. In maintenance budgeting, there are two prime elements relating to what to budget for and how to assess its cost.

Financial control is an important aspect of maintenance management; this ensures that maintenance proposals justify the funds requested and that organizations obtain best value for money.

A maintenance strategy, and its associated maintenance programme(s), should include estimates of the cost of known work and provision for work that may be required but where the extent is unknown. These estimates should be used as the basis for preparing budgets for maintenance in line with an organization’s overall financial planning and management accounting requirements. Budgets should include, but are not limited to, repair/replace decisions, the optimization of planned preventive maintenance, surveying/inspection costs and whole-life costs. Budget proposals should be presented in a way that identifies,

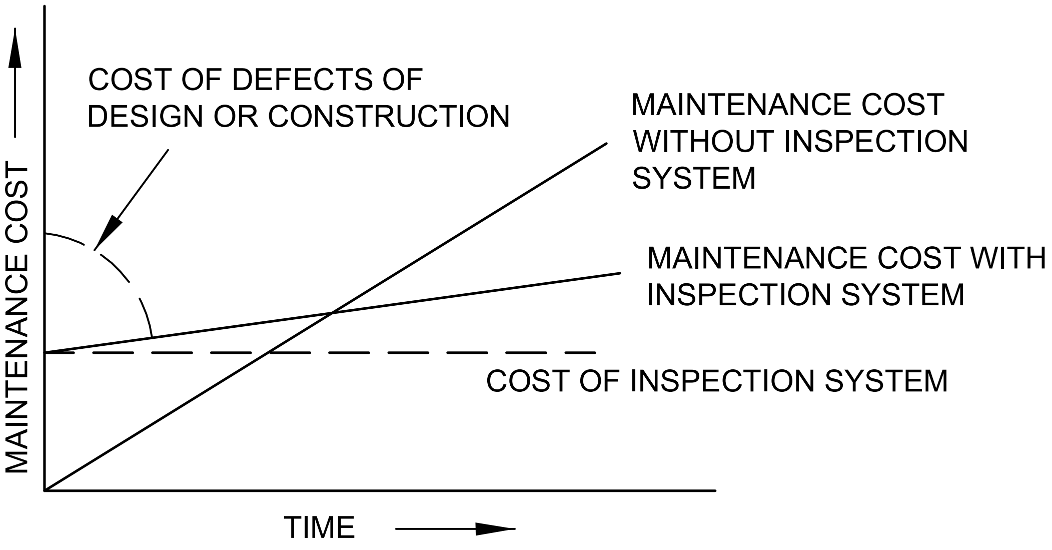
a) the impact on capital value;

b) the costs and benefits that accrue from the funds required;

c) the risks and associated costs of not carrying out maintenance programmes in accordance with the maintenance strategy; and

d) the costs and benefits of repair against refurbishment and against replacement and the basis of calculation, for example, net present value (NPV).

In the case of outsourced contracts, the contract sums and the costs associated with the management of the contracts, should be prepared. An audit should be carried out in each financial year to ascertain the extent to which best value for money has been obtained from the funds expended in the previous year on maintenance



NOTES

1 In general maintenance classification may be as:

a) Major repair or restoration,
b) Periodic maintenance, and
c) Routine or day-to-day maintenance.

2 A system which is based on planned inspections and maintenance will have higher overhead costs than the one that is not, but the planned lead to lower maintenance expenditure.

FIG. 1 COST RELATIONSHIP BETWEEN PLANNED AND UNPLANNED SYSTEM

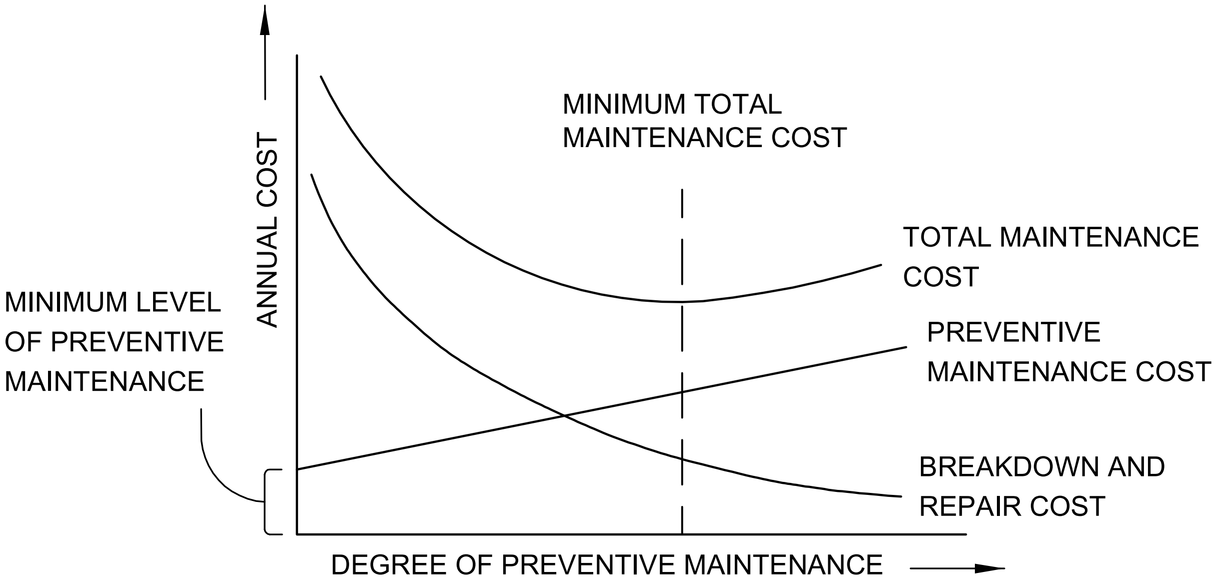


FIG. 2 TRADE-OFF BETWEEN REPAIRS AND PREVENTIVE MAINTENANCE

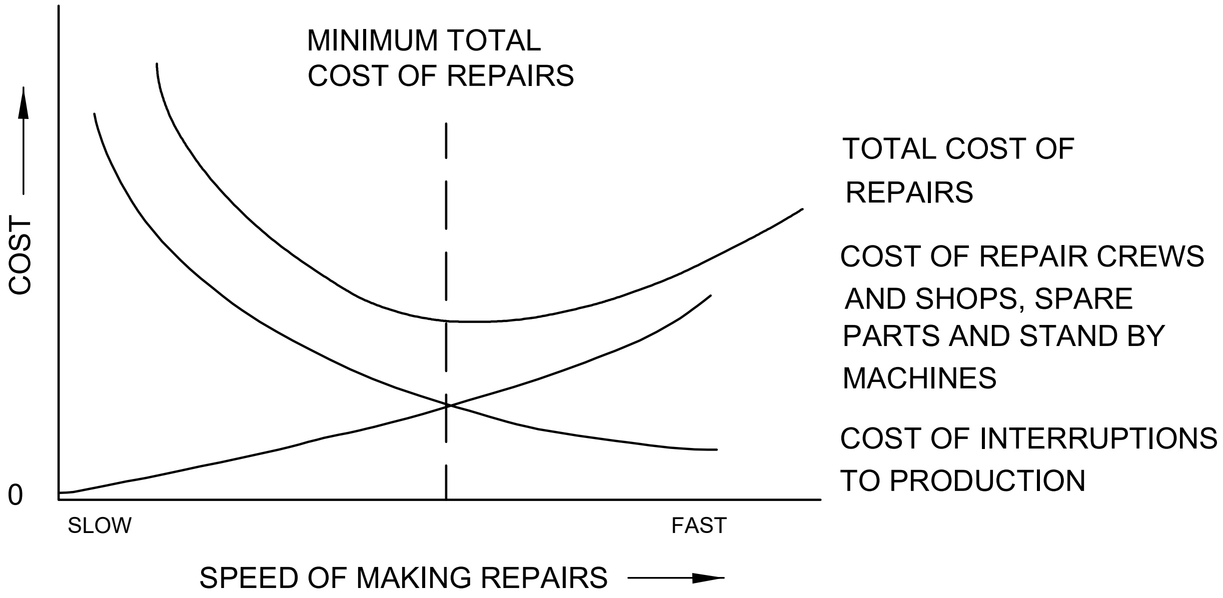


FIG. 3 SPEED OF MAKING REPAIRS

and to determine if any changes are needed to improve value for money.

It will be a good practice to carry out during the following financial year, a technical audit to ascertain the extent to which value for money was obtained from the funds expended in the previous year and what improvements in management may be made to improve cost benefits.

Guidelines relating to estimation of expenditures for maintenance as given in **6.1** may be used.

5.2 Content of Budget

5.2.1 A pre-requisite for sound budgeting is accurate knowledge of what needs to be done and the means of doing it.

5.2.2 The life of materials and rate of deterioration of elements of buildings including electrical/mechanical services are subject to many influences. Efficient maintenance management is an important factor but loads to which buildings services are subjected, intensity of use of internal finishes and severity of climatic conditions are others. These factors may be suitably considered while preparing the budget. Detailed guidance regarding factors affecting maintenance is given in IS 15183 (Part 1).

5.3 Budget Assessment

5.3.1 The scope of work should be realistically established to determine its cost for budget purposes. Realistic costing is needed not only in the interest of accuracy but to retain the confidence of general maintenance.

5.3.2 Comparisons may be drawn with the performance of similar buildings (albeit with diverse maintenance management competence) and may be used to ensure that budgets and thus work programmes, keep pace with requirements.

5.3.3 Budgeting and indeed, the maintenance policy as a whole, is closely related to maintenance economics and finance available. Consideration should be given to accumulation of accounts on rolling basis.

6 YARDSTICK FOR EXPENDITURE ON MAINTENANCE

6.1 Recommendatory Expenditures for Maintenance

A major part of expenditure on asset/facility management is incurred on maintenance, which is determined as follows:

a) Maintenance for day-to-day services,
b) Annual repairs, and
c) Special repairs.

Plinth area maintenance rates, that is annual financial yardstick established for building maintenance on plinth area basis for civil, electrical/mechanical works may be taken as per existing provisions in works departments at central or state level or any other prevalent rates.

6.1.1 *Weightage for Hilly and Coastal Regions*

Special considerations may be taken into account for hilly areas, coastal areas or other areas with severe aggressive climate.

6.1.2 *City and Year-Service Cost Index Factor*

These rates may be suitably multiplied by approved city and year maintenance cost index factor to set the present values for particular city for particular time period.

6.2 Weightages for various components may be determined based on the usage and applied to work out cost index factors for maintenance works.

NOTE — Typical weightages for building maintenance works may be:

a)	Aggregate	3.50
b)	Cement	9.00
c)	Lime	15.00
d)	Paint	25.00
e)	Sand	4.00
f)	Timber	9.00
g)	Unskilled labour	23.50
h)	Skilled labour	11.00
	Total	100.00

However, the wages shall be governed by *the Minimum Wages Act* along with the statutory provisions like PF, ESI, Bonus, etc, and other prevalent mandatory regulations of the respective States/Union Territories.

6.3 Maintenance Norms, Frequency of Application of Finishing and Various Items

6.3.1 The maintenance norms and frequency of application of finishing and various items for guidance is given below.

6.3.1.1 *Residential buildings*

a) White washing on ceiling and other places : Once every year

b) Removing dry/oil bound distemper : Removal of dry distemper once in four years

Removal of oil bound distemper once in six years

c) Oil bound distemper : Once in every three years

d) Dry distemper : Once in every two years

e) Synthetic enamel painting doors and windows : First repaint after two years, thereafter once in every 3 years

f) Water-proofing cement paint : Once in every three years

6.3.1.2 *Office buildings*

a) White wash : Once every year

b) Oil bound distemper : Once in every three years

c) Dry distemper : Once in every two years

d) Acrylic distemper : Once in every three years

e) Plastic emulsion : Once in every three years

f) Synthetic acrylic polish : Once in every six years

g) Synthetic enamel paint/lacquer polish : Once in every three years

h) Water-proofing cement paint : Once in every three years

j) Sandtex mat or equivalent synthetic/silicone based paint : Once in every six to eight years

k) Painting of entrance foyers, main stair case, toilets, corridors of public buildings, etc : Once in every six months

m) Carpet shampooing : Once in every three months (or based on requirement)

n) Char shampooing : Once in every three months (or based on requirement)

p) Façade cleaning : Once in every three months (or based on requirement)

6.3.1.3 *Hospitals*

a) Corridors, OPDs : Washable acrylic distemper once in every six months

b) Wards, private rooms : Washable acrylic distemper once in a year

c) Doors : Synthetic enamel paint once in two years

d) Other areas : As per norms of office buildings

e) Superior paints (such as acrylic, enamel, plastic emulsion) : Once in every 5 years

6.4 Road Work

Premix semi-dense/carpeting of internal roads — once in six years.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Building Construction Practices Sectional Committee, CED 13

Organization	*Representative(s)*
In Personal Capacity (*Flat No. 2061, Engineers Apartments, Plot 11, Sector - 18A, Dwarka, New Delhi* 110078)	Shri D. S. Sachdev (***Chairman***)
Ahluwalia Contracts (India) Limited, New Delhi	Shri Shobhit Uppal Shri Pradeep Kumar (*Alternate*)
Association of Consulting Civil Engineers (India), Bengaluru	Shri A. N. Prakash Shri Satish V. Salpekar (*Alternate*)
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Building Materials & Technology Promotion Council, New Delhi	Shri Chandi Nath Jha
Central Insecticides Board, Faridabad	Additional PPA cum Secretary (CIB & RC) Joint Director (Entomology) (*Alternate*)
Central Public Works Department, New Delhi	Chief Engineer (CSQ) Superintending Engineer (TAS) (*Alternate*)
Confederation of Construction Products and Services, New Delhi	Shri Deepak Gahlowt Shri Shashi Kant (*Alternate*)
CSIR-Central Building Research Institute, Roorkee	Shri S. K. Negi Dr Ajay Chourasia (*Alternate*)
CSIR-North East Institute of Science and Technology, Jorhat	Representative
CSIR-Structural Engineering Research Centre, Chennai	Director Dr P. Srinivasan (*Alternate*)
Delhi Development Authority, New Delhi	Chief Engineer (SZ) Superintending Engineer (P) -1 (*Alternate*)
Delhi Urban Shelter Improvement Board, New Delhi	Representative
Engineers India Limited, New Delhi	Shri Rajanji Srivastava Shri Ravindra Kumar (*Alternate*)
Forest Research Institute, Dehradun	Dr Kishan Kumar V. S.
Housing & Urban Development Corporation Limited, New Delhi	Representative
Indian Buildings Congress, New Delhi	Shri S. C. Bhatia Shri P. S. Chadha (*Alternate*)
Indian Pest Control Association, New Delhi	Vice President General Secretary (*Alternate*)
Indian Plywood Industries Research & Training Institute, Bengaluru	Shri Amitava Sil Shri Anand Nandanwar (*Alternate*)
Larsen & Toubro Limited, ECC Division, Chennai	Shri Rajan Venkateswaran Shri V. Sukumar Hebbar (*Alternate*)

Organization	*Representative(s)*
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NBCC (India) Limited, New Delhi	EXECUTIVE DIRECTOR (ENGG) GENERAL MANAGER (ENGG) (*Alternate*)
NTPC Ltd, New Delhi	SHRI R. L. DAS SHRI ANIL KAPOOR (*Alternate*)
Pest Control (India) Pvt Ltd, Mumbai	SHRI SHANKAR M. GHUGE SHRI NITIN B. JAGTAP (*Alternate*)
Public Works Department, Govt of Gujarat, Gujarat	SUPERINTENDING ENGINEER, DESIGN (R&D)
Public Works Department, Govt of NCT of Delhi, New Delhi	REPRESENTATIVE
Research, Designs and Standards Organization, Ministry of Railways, Lucknow	DIRECTOR (WORKS) ADE (WORKS) (*Alternate*)
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The Institution of Engineers (India), Kolkata	SHRI P. K. ADLAKHA SHRI DEVENDRA GILL (*Alternate*)
In personal capacity, (*Pratap Nursery Lane Near Gurudwara, Panditwari, Dehradun*)	SHRI K. S. PRUTHI
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SCIENTIST 'D' (CIVIL ENGINEERING), BIS

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Amendments Issued Since Publication

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg CHANDIGARH 160019	265 0206 265 0290
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	2254 1216, 2254 1442 2254 2519, 2254 2315
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